

Pattern of seated activity in sensory gardens among the special schooled children

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This study investigated the seated activity among special schooled children and their adult carers in two sensory gardens in the United Kingdom. Seated activity was established whether the seating was used as intended or whether users preferred to sit on other attributes during their learning session. The objectives of this study are to explore opportunities for users' activity and their engagement with the attributes, whether activity is possible or if opportunities are not being actualised because of barriers. Observation and behaviour mapping methods were carried out alongside the affordance theory. The outcome suggests that the number of users, the number of attributes and the total area of the zone did not relate to the median time spent per user rather, it was the richness of the attributes that did.

Key words: affordance, seated activity, sensory garden

Introduction

Sensory gardens have evolved gradually from the traditional concept of a 'garden for the blind' (Hussein, 2010). The term 'sensory garden' has been very much over used in recent year but, in a therapeutic context, it usually refers to a small garden that has been specially designed to fulfil the needs of a group of people who want to be involved in active gardening and who also enjoy the passive pleasures of being outdoors amongst plants (Gaskell, 1994).

During an interview the author conducted with Kath Jefferies in 2007, who is a retired deputy head teacher of the Lyndale School, she mentioned that:

'Every special school has slightly different needs. The sensory garden will reflect those needs so no sensory garden will be the same. They might have similar attributes but there will always be an emphasis upon the needs of their individual children'

Following from Jefferies' statement, this study would observe and record how users responded to and engaged with the attributes in a sensory garden.

Literature Review

The theory of affordance was first coined by Gibson (1979/1986) is defined as the functionally significant properties of physical opportunities and dangers, which an organism perceived while acting in a specific setting (Gibson and Pick, 2000; Heft, 2001; Kyttä, 2003). In this study, the theory is useful in understanding and describing the engagement between users and the environment attributes and identifying their behavioural responses as well as the possibilities that a sensory garden can offer users, whether or not the designers intended those possibilities when designing the garden.

Children's engagement with the environment can be divided into two levels of affordances: *actualised* and *potential* (Kyttä, 2003). Actualised affordances are what the children encountered during their independent mobility, perception an engagement with the environmental attributes

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(Heft, 1999; Kytta 2002, 2003, 2004, 2006). Potential affordances are different for each individual and each specific group of people, depending on how their physical skills or bodily proportions, social needs and personal intentions are matched with the environmental attributes (Kytta 2002, 2003, 2006). Heft and Chawla (2006) assented that access and mobility are equally significant when engaging with affordances. In this study, the actualised affordances recorded the seated activity users undertook that were afforded by the design of the sensory garden. The potential affordances recorded an attribute in the garden, such that it had potential to offer an affordance but there was some design limitation that hindered uptake by the users.

Methods and measures

Lyndale School in Liverpool (LS) and Royal School of Deaf and Communication Disorders in Manchester (RSDCD) were chosen as case-study sites. In both special schools, there was no timetable allocation set for the children and their adult carers. Children had their own individual timetable and they were free to use the garden as they wished, with the help of their adult carers. However, children were not allowed to wander around the garden by themselves. As a result, the author made a decision to record and observe all users who utilised the garden, in a specific observation period. The methods applied were observation and behaviour mapping. The data gathering was conducted in May and July, for seven days each month where this time of year has possibly the best outdoor conditions. The data was recorded continuously from 8.30am to 3.30pm on weekdays, during the opening hours of the school during the term.

Measures undertaken to enable user engagement with the attributes and the richness of activities in the sensory garden: Activities occurred and attributes engaged with refer to the number of seated activity on seats or on other attributes, which most and least frequently occurred in each zone of the sensory garden during the observation period. Length of engagement with is the time-span, in seconds and minutes, of the users' seated activity in each zone of the sensory garden during the observation period. The data later shows the link between the attributes and the number of users and the median time spent per person in the different zones of the sensory garden.

Findings and Discussion

Although seated activity had the least number of frequencies, compared to the other main activities (walking, running, stopping, standing, talking, playing, laying down and singing), it was established in which zones the users spent most or least time sitting which engaging with the attributes. Seated activity is important for children with special educational needs, including wheelchair users, who may have mobility impairment or may not be able to stand and move around easily. It was also established whether the seating provided in the sensory garden zones was used as it had been intended or whether users preferred to sit on other attributes of their own choice, such as pathways or raised beds.

Lyndale School

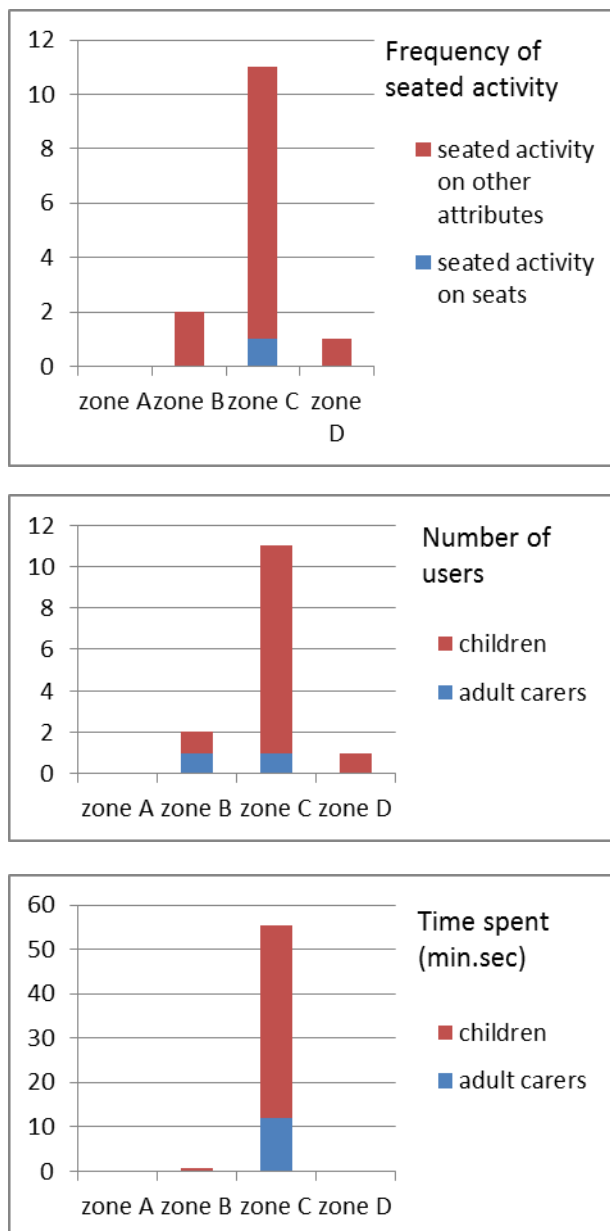


Figure 1: Frequencies of seated activity, the number of users and the total time spent recorded in the LS, according to the zones.

Findings from figure 1 show that 11 users spent a total of 55 minutes and 30 seconds sitting at zone C, in comparison to the other zones. This means that each user spent a median of 5 minutes there. Apart from having a bench in this zone, there are also pockets of lawn to sit on. For example, on a lovely afternoon of the observation period, two adult carers and two students were sitting on the lawn and had a picnic (see Image 1).

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Image 1: Pockets of lawn at zone C, occasionally used for sitting. Source: (Hussein, 2009)

Note: Photographs were taken by the author in the sensory gardens but none include shots of the users due to the school policy.

The second highest number of users ($n=2$) sat at zone B for a total of 1 minute, which means that each user spent only 30 seconds sitting at the end of the boardwalk (see Image 2). This is a reference to a partially-hearing impaired child with his mate who was in a wheelchair, wheeled by their adult carer. They wanted to continue their exploration of the boardwalk but did not manage to do so because the path came to a stop. As a result, both the child and his adult carer just sat on the end of the boardwalk.



Image 2: A pathway that stops abruptly that is used as seating at zone B. Source: (Hussein, 2009)

In contrast, zone A had no users utilising the area for sitting, even though it is the largest area in the sensory garden. This is probably because no seats were provided and the pathway stops abruptly at zone B. During the whole period of observation, none of the users complained about not having any seating. This is probably because this zone was used as an outdoor classroom for speech therapy, which affords jumping, stamping, skipping, clapping and singing. On the other hand, zone D has no seats but a 3-D artwork display attracted a child who chose to sit on the log platform for 30 seconds (See Image 3). Some children were observed engaging with the water trapped between logs while sitting on the artwork display.



Image 3: Log platform of an artwork display used as seating at zone D. Source: (Hussein, 2009)

Figure 2 shows a summary of the frequencies of seated activity and the total area of all zones in the sensory garden of LS.

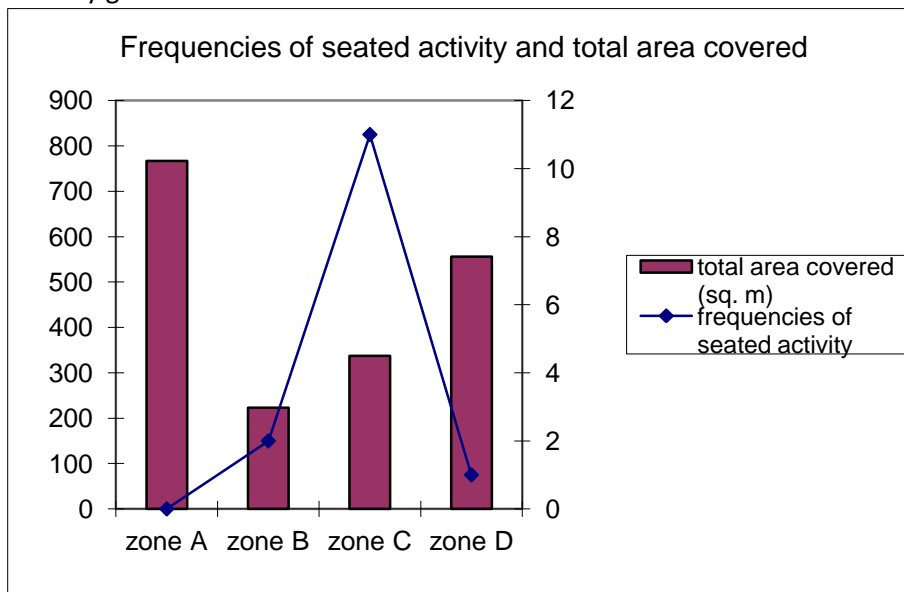


Figure 2: Frequencies of seated activity in which users engaged and the total area, recorded in the sensory garden of the LS, according to the zones.

Of all the zones in the sensory garden of the LS, zone C had the greatest frequency of seated activity with which users engaged. In terms of the median time spent per user, zone C had the longest median time spent per user of 5 minutes, followed by zones B and D, of 30 seconds. None of the users sat in zone A. The results suggest that the number of users, the number of attributes and the total area did not relate the median time length of time spent per user but rather, it was the attractiveness and richness of the attributes that were offered in the zone that did.

Royal School of Deaf and Communication Disorders

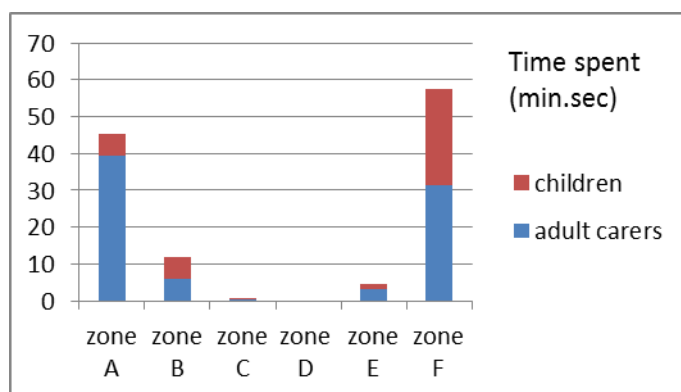
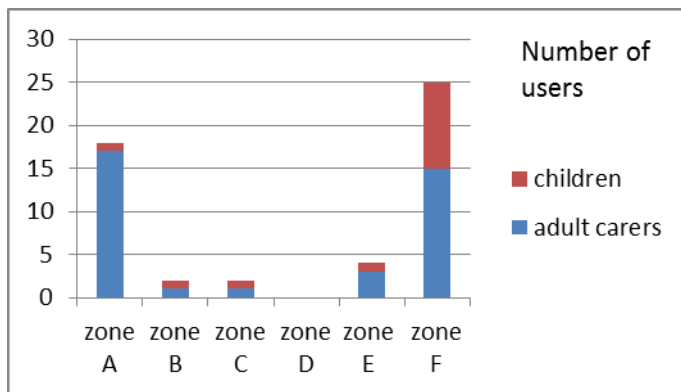
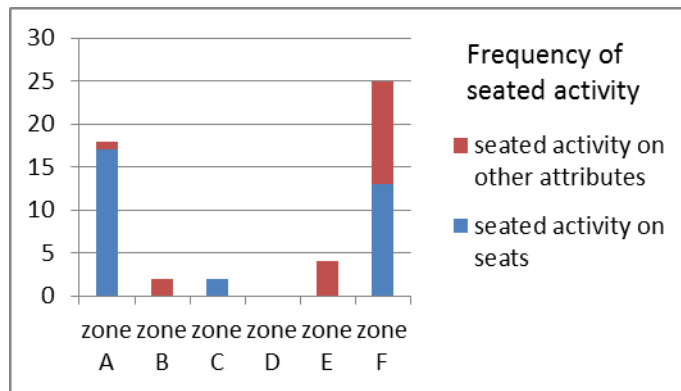


Figure 3: Frequencies of seated activity, the number of users and the total time spent recorded in the RSDCD, according to the zones.

Findings from figure 3 show that 25 users spent a total of 58 minutes sitting at zone F compared to the other zones, which means that each user spent a median of 2 minutes and 32 seconds there. This is because having a water feature in the centre of the sensory garden appears to draw users towards the sound of the water. Even if the water feature does not work, and although the area is the smallest of all, users choose to sit there to chat, enjoy the herbs and scented plants in the raised beds and conduct therapy sessions. For example, on the first day of the observation, a group of adult carers, with children in wheelchairs, were strolling on a sunny afternoon. One of the adult carers wanted to sit near the water feature because her student felt calmer with sitting close to the feature. Another adult carer said, 'Oh! There is one seat missing! I'll go and get one there (while pointing at another area of seating). The adult carer then went there, lifted and carried a seat from a location at zone A and placed it close to the water feature.

The second highest number of users (n=18) sat in the sensory garden at zone A for a total of 45 minutes and 30 seconds, which means that each user spent a median of 2 minutes and 52 seconds

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there. This was the largest zone, in terms of its total area and was provided with the greatest number of seats. For example, during the observation period, on a sunny day, a visually-impaired child preferred to sit on the pathway rather than on a seat, while his adult carer preferred to sit on a seat (see Image 4). 'I don't know why Daniel loves to sit on the pathway but he seems to enjoy it,' said his adult carer to a colleague who passed by. Here, people would sit on the provided seats or on the other attributed, such as the pathway or raised beds.



Image 4: Pathways and raised beds were used as seating at zone A. Source: (Hussein, 2009)

In contrast, zone D had no users who utilised the area for seated activity, even though it is the third largest area in the sensory garden. This is probably due to the lack of variety of attributes that are offered in this area compared with the other zones.

Of zones B, C and E, the first has the second largest area but the fewer number of people choosing to sit ($n=2$), with the longest time spent there of 12 minutes in total, compared to zones C and E. This signifies that each use spent 6 minutes sitting on the pathway as no seats were provided in this area. These two users were an adult carer and a child with a learning difficulty. She tried to attract his attention to the water feature but he went towards the noise (one of the school buildings was being refurbished in May. The work was completed in July). The child sat on the pathway near the construction fence and looked at the builders. Sometimes both parties communicated with one another (see Image 5)



Image 5: Zone B. This was where an adult carer, together with a child who had a learning difficulty sat on the pathway near the construction fence. No seats were provided here.

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Similar to zone B, zone C had two users who sat on a seat for a total of 1 minutes (see Image 6). Although this zone has seating, the least amount of time was spent in it compared to zones B and E, where one user spent only 30 seconds sitting at zone C.



Image 6: Picnic seat at zone C. Source: (Hussein, 2009)

Unlike the two zones mentioned above, zone E had four users who sat on other attributes, such as the rock sculpture (n=2) and wood edge (n=2) for a total of 5 minutes, which indicates that each user spent a median of 1 minutes and 25 seconds there. Two adult carers sat on the rock sculpture and took photographs beside the feature. No seats were provided in this zone (see Image 7).



Image 7: Rock sculpture and wood edge used as seats at zone E. Source: (Hussein, 2009)

Figure 4 shows a summary of the frequencies of seated activity and the total area of all the zones in the sensory garden of the RSDCD.

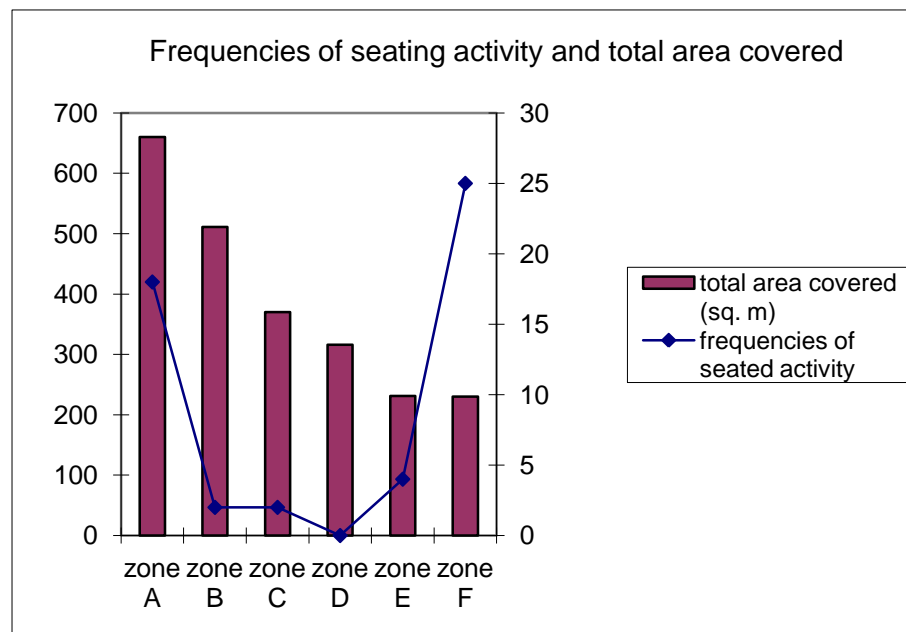


Figure 4: Frequencies of seated activity in which users engaged and the total area, recorded in the sensory garden of the RSDCD, according to the zones.

From figure 4, zone F had the greatest frequency of seated activity engaged in by the users. In terms of the median time spent per user, zones B and C are comparable because both zones had 2 users who sat in the area. Although zone B offered six attributes, the median time spent there per user was the highest recorded (6 minutes), compared to zone C with seven attributes but the total time spent there per user was only 30 seconds. The highest number of seated users occurred in zone F with 25 users (2 minutes and 32 seconds per user), followed by zone A with 18 users (2 minutes and 52 seconds per user), then zone E with 4 users (1 minute and 25 seconds per user), while no one sat in zone D. According to the number of users, therefore, the number of attributes and the total area did not relate to the length of the median time spent in a zone per user but, rather, it was the attractiveness and richness of the attributes on offer that did.

Conclusions

The paper correlated the total area of sensory garden with the frequencies of users and the seated activity that the author recorded during the behavioural mapping. The results signified that there are factors that influenced the pattern of use as follows:

- The users' activities in the sensory garden were dependent neither on the size of the zone nor on the number of attributes but rather on the functionality of the attributes that were available.
- The results also suggest that the number of attributes and the total area did not correlate with the median time length of time spent there per user.
- Correlations with the number of users and the time they spent sitting in the zones better related to the functionality of the attributes than the total area or the availability of seating. In other words, users used areas where they can sit in, rather than seats to sit on. Therefore, the focus on seated activity (sit-able) is an equal concern with moving because children with special educational needs sit in different attributes than the adult carers.

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In terms of the total area in each of the zones, a study by Bell (2006) reviewed the scale of spaces and described the differences in the way that children behave in differently sized spaces. Bell (2006:17) emphasised, 'children interact with spaces of different sizes in a variety of situations'. He added that the size of space proved to be significant in terms of the spatial interaction possibilities it offers between children (and adults) and their surroundings, based on research by Piaget and Inhelder (1956). Bell then concluded that the scale of an area could be considered as a vital variable in relation to behaviour, cognitive spatial development and the decision making of the users. However, the findings from this study did not support Bell's conclusion.

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